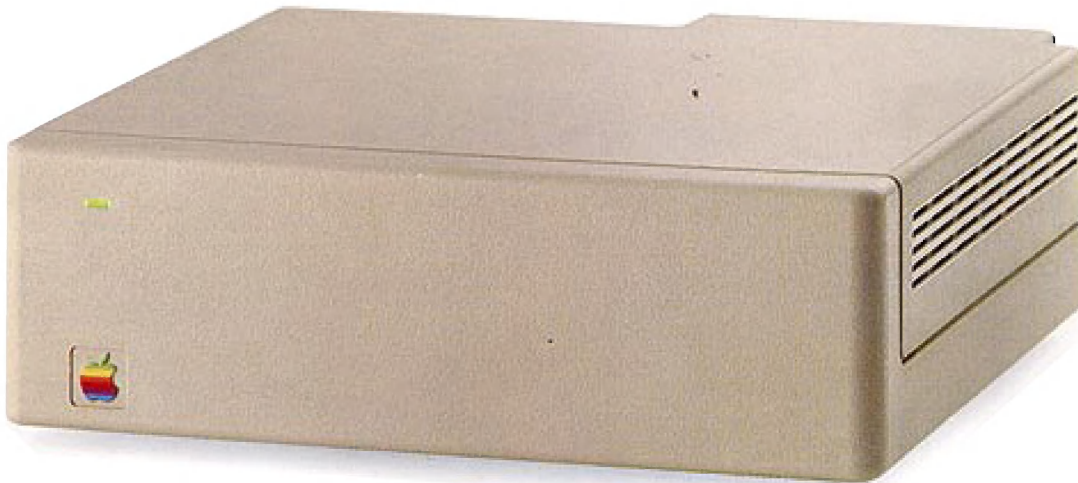




Macintosh[™] Hard Disk 20



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Written by Lynnea Johnson of Apple User Education.

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Hard Disk 20



Contents

iv	Introduction
1	Chapter 1: Getting Started
2	Setting Up
2	Unpacking
2	Before You Begin
2	Handling the Hard Disk
2	Connecting the Hard Disk
4	Starting Up for the First Time
8	Switching On and Off
8	Switching On
8	Switching Off
9	Connecting and Disconnecting Hardware
10	Adding On
10	Adding a Second Hard Disk 20
11	Adding an External 3½-Inch Disk Drive
13	Chapter 2: Using the Hard Disk 20
14	Finding Your Work
15	The Open... Command
19	The Save As... Command
22	Using 3½-Inch Disks or Another Hard Disk 20
23	Backing Up Your Work
24	About the New Finder
24	Where System Software Lives
24	Current Startup Disk
25	Full Capabilities in Any View
26	Dragging Icons
26	Naming Icons
27	Ejecting Disks
27	The Apple Menu
28	File Menu
29	Special Menu
30	Lost Folders
31	About the Choose Printer Desk Accessory
32	Installing the LaserWriter
33	About the Font and Desk Accessory Mover
33	Adding or Removing Fonts or Desk Accessories

37	Chapter 3: Maintenance and Troubleshooting
38	Maintenance
38	Operating Environment
38	Cleaning
39	Troubleshooting
39	The Problem
40	Using Hard Disk 20 Test
43	Appendixes
44	Appendix A: Hard Disk 20 Specifications
45	Appendix B: Service and Support
46	Appendix C: Radio and Television Interference
48	Appendix D: Safety Information
49	Glossary
53	Index

Introduction

Your Apple® Hard Disk 20™ gives you 20 megabytes of storage—the equivalent of 50 single-sided 3½-inch disks—and fast, reliable performance. You can add an external 3½-inch disk to your hard disk for more storage and functionality, or if you want twice the storage of the Hard Disk 20, you can add a second Hard Disk 20 to the first. And your Hard Disk 20 saves desk space: it fits conveniently under the Apple Macintosh™ computer.

With a few exceptions, you'll use the hard disk just as though it were a larger version of a 3½-inch disk. Along with some other system files, your Hard Disk 20 comes with a new version of the Finder and System file, which locate information quickly and easily.

If you haven't used the Macintosh before, first read *Macintosh*, the owner's guide, for the basics. Or take a Guided Tour to let the Macintosh demonstrate itself.

Chapter 1

Getting Started

Setting Up

■ Unpacking

To set up your Hard Disk 20, read the following instructions. Then read Chapter 2 before you switch on your system.

The Hard Disk 20 box holds the hard disk and the accessory kit with the following:

- This manual
- Hard Disk 20 Startup disk (encased in the back cover of the manual)
- Hard Disk 20 power cord

Remove the plastic bag from the hard disk. The 19-pin connector cable is covered with a protective, antistatic bag; keep the bag on the connector until you attach the connector to the Macintosh (see “Connecting the Hard Disk”). It’s a good idea to keep all your packing materials in case you need to transport your hard disk.

■ Before You Begin

Make a copy of the Hard Disk 20 Startup disk for safekeeping. See “Copying an Entire Disk” in *Macintosh*, the owner’s guide, for instructions.

■ Handling the Hard Disk

Your Hard Disk 20 is a mechanical device with moving parts. Treat your hard disk as you would a stereo turntable. You can carry it around; just be careful. Rough handling, such as dropping the hard disk, jarring or bumping it (especially while it’s running), or allowing heavy objects to drop on it, can cause a malfunction or damage the information on the disk.

■ Connecting the Hard Disk

■ Place your Hard Disk 20 under the Macintosh.

To ensure proper ventilation while the hard disk is on, be sure not to block the air vents on the sides of the unit.

If you prefer to put the hard disk to the side of the Macintosh, place it on the right side. You risk magnetic interference from the Macintosh’s power supply and video circuitry if you place the hard disk on the left side of the Macintosh.

■ With the Macintosh plugged in and *switched off*, touch any one of the metal connectors on the back of the Macintosh.

This procedure discharges any static electricity that may be on your body.

■ Remove the antistatic bag from the end of the connector cable.

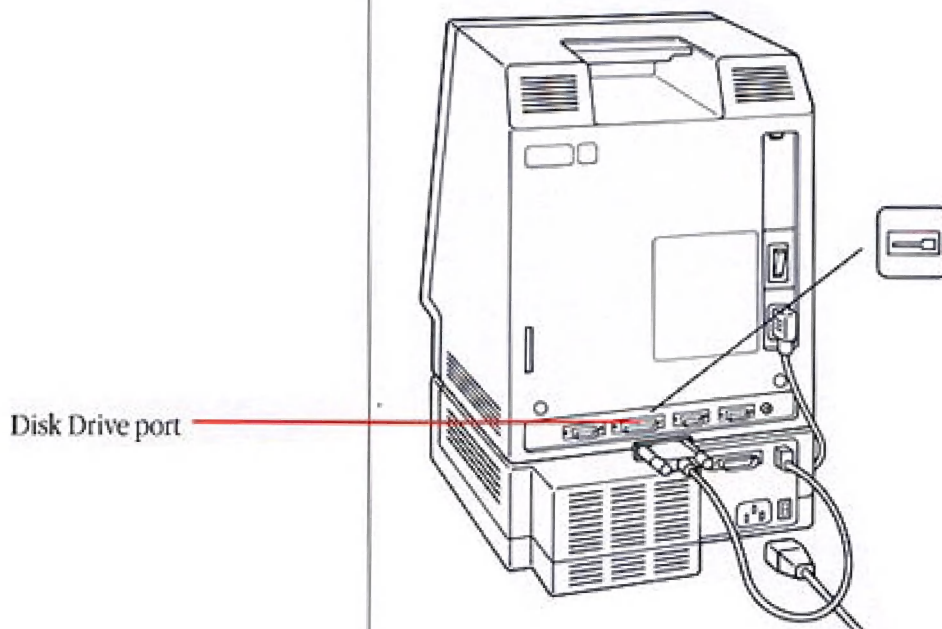
- **Without touching the metal pins in the connector, attach the cable to the back of the Macintosh by inserting the connector into the Disk Drive port, the socket marked with a picture of the disk drive.**

Keep the antistatic bag so that you can protect the pins from static discharge whenever the Hard Disk 20 isn't connected to the Macintosh.

- **Tighten the thumbscrews on the connector to prevent radio and TV interference.**

The metal plate makes contact with the screws and grounds the disk drive. Also, tightening the screws keeps the connection from coming loose.

- **With the Hard Disk 20 *switched off*, attach the Hard Disk 20 power cord to the hard disk, and plug the power cord into a three-prong AC outlet.**



Important Safety Instructions: The Hard Disk 20 is intended to be electrically grounded. It's equipped with a three-wire, grounding-type plug, a plug that has a third (grounding) pin. This plug fits only into a three-prong (grounding-type) AC outlet. This is a safety feature. If you can't insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. Don't defeat the purpose of the grounding-type plug.

If you're adding a second Hard Disk 20 to your system, see "Adding On" in this section.

The next section describes starting up your Hard Disk 20 for the first time. Be sure to read it before you switch on the Hard Disk 20 or the Macintosh.

Starting Up for the First Time

■ Switch on the Hard Disk 20.

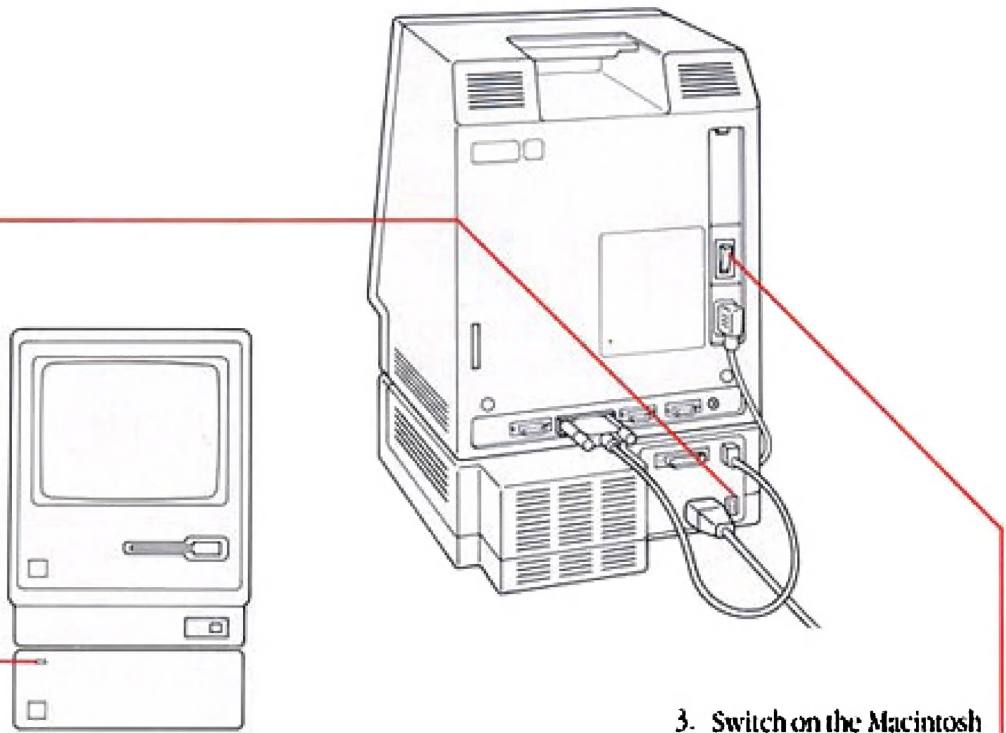
If you have two Hard Disk 20s, you can switch them on in either order.

The hard disk whirs and beeps softly and in 15 seconds the green light in front blinks, indicating the disk is busy. The green light remains on while the hard disk is on and blinks whenever there's disk activity.

■ When the green light is steady, switch on the Macintosh.

1. Switch on the Hard Disk 20 On/Off switch

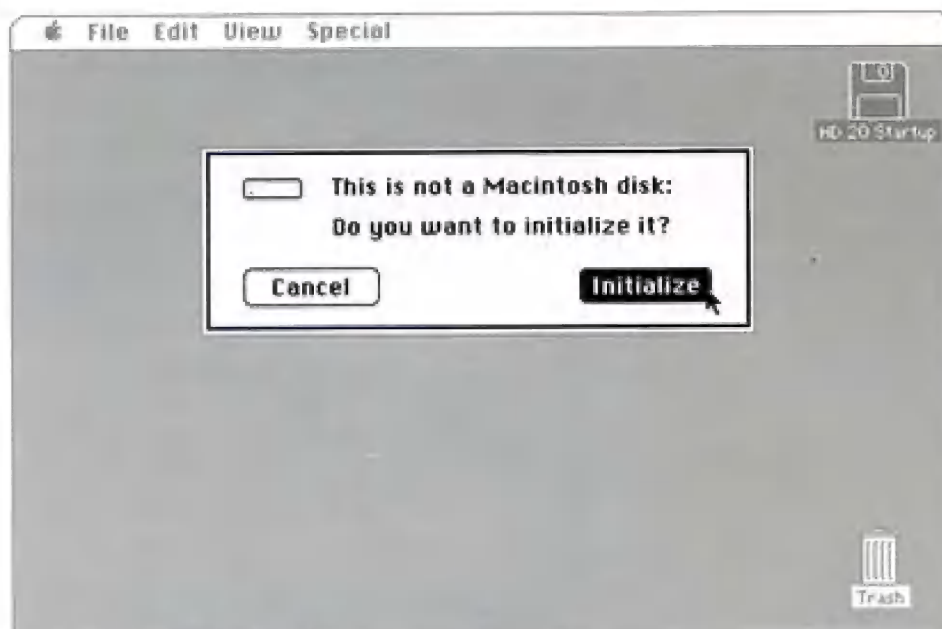
2. Wait for the steady green light



3. Switch on the Macintosh

■ Insert the Hard Disk 20 Startup disk in the internal disk drive.

A dialog box appears asking whether you want to initialize the hard disk.



■ **Click Initialize.**

The initialization process takes about 3 minutes. When it's complete, you're asked to name the disk. Disk names can contain up to 27 characters. You can use any character you can type on the keyboard, except colons (:).

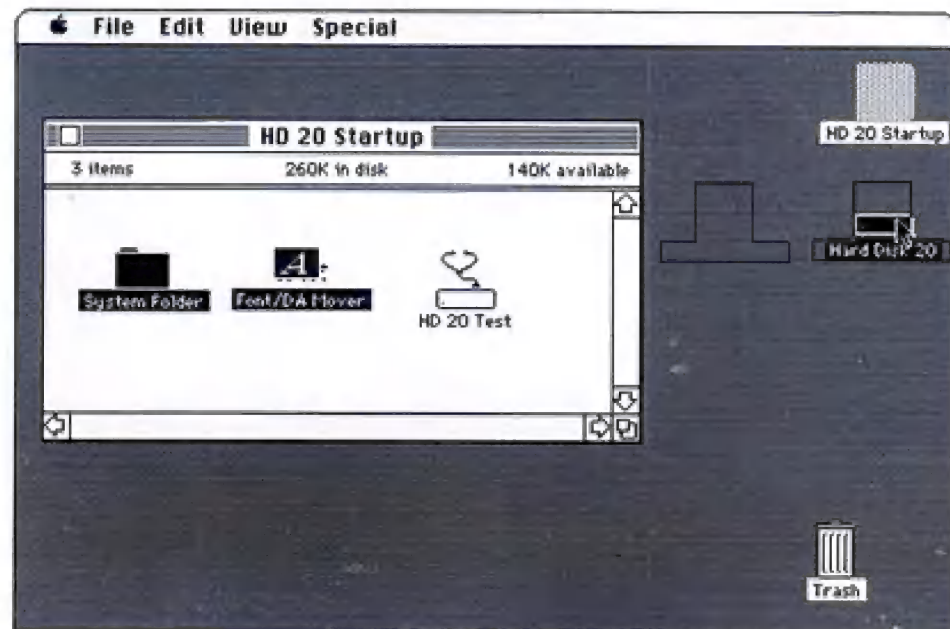
If a message tells you that the Hard Disk 20 failed to initialize properly, try again. If the hard disk still doesn't initialize, turn to "Troubleshooting" in Chapter 3 for help.

After the disk is initialized and named, the Hard Disk 20 icon appears on the desktop below the Hard Disk 20 Startup disk.

Now, make the Hard Disk 20 a startup disk by copying the new Finder, System file, and other system files to the hard disk.

■ **Select the Hard Disk 20 Startup disk icon and open it by choosing Open from the File menu or by double-clicking the icon.**

- **Drag the System Folder and Font/DA Mover application from the Hard Disk 20 Startup disk to the Hard Disk 20.**



Hard Disk 20 Test is an application that tests the performance of the hard disk. Leave it on the Hard Disk 20 Startup disk. See Chapter 3 for information.

The System Folder contains the following:

- A new Finder, version 5.0 (see Chapter 2 for a description of new features). The version number appears in About the Finder from the Apple menu.
- A new System file (created September 1, 1985) enhanced for the Hard Disk 20. The Get Info command from the File menu contains the creation date of the System file.
- The Hard Disk 20 file, resource software (sometimes called a driver) that lets the Macintosh and Hard Disk 20 communicate.
- The ImageWriter™ file, the printing resource for the ImageWriter printer.

If you had customized your old System file on 3½-inch disks with your own font selection and desk accessories, use Font/DA Mover to customize your new System file in the same way. See Chapter 2 for instructions on using Font/DA Mover.

You can't copy your customized System file to the hard disk; you must use the new System file in the System Folder of the Hard Disk 20 Startup disk. The new System file provides you with better access to large numbers of files—something you didn't need on a 3½-inch disk.

- **Eject the Hard Disk 20 Startup disk by choosing Eject from the File menu.**

- **Switch off the Macintosh, reinsert the Hard Disk 20 Startup disk, and switch the Macintosh back on.**

This time the Hard Disk 20 Startup disk simply prepares the Macintosh to work with the hard disk and ejects itself. You won't need it until you want to switch your system on again.

Whenever you want to use the Hard Disk 20 with the Macintosh, you use the Hard Disk 20 Startup disk in the internal disk drive to start up your Macintosh.

- **Now copy any applications and documents you have to the hard disk.**

Insert a disk with applications or documents into the internal disk drive (or into the external 3½-inch disk drive if one is attached to the hard disk; see "Adding On" in this chapter). Copy the files by dragging them to the Hard Disk 20 icon or to the disk directory window.

Some copy-protected applications from manufacturers other than Apple can't be copied. Contact the manufacturer or authorized Apple dealer for more information.

Switching On and Off

Switching On

To protect the information stored on your Hard Disk 20 it is important to switch your Macintosh and hard disk on and off with the procedures described below.

You use the Hard Disk 20 Startup disk each time you switch on the hard disk:

- ☐ Switch on the Hard Disk 20, wait for the steady green light, and then switch on the Macintosh.
- ☐ Insert the Hard Disk 20 Startup disk in the internal disk drive.

The Hard Disk 20 Startup disk prepares the Macintosh to use the hard disk. When the preparation is complete—it takes about 20 seconds—the Macintosh ejects the disk and presents the desktop, with the Hard Disk 20 icon appearing in the upper right corner. The Hard Disk 20 is the current startup disk—the disk with the system files the Macintosh is currently using. It remains the current startup disk even when you use an application on another disk (see “Current Startup Disk” in Chapter 2). If problems develop during the startup phase, see “Troubleshooting” in Chapter 3.

Switching Off

You can leave your Hard Disk 20 on unused for several days; it uses very little power. Switch it off, as described here, when you won't be using it for a week or more, or when you want to connect it to or disconnect it from the Macintosh or other hardware.

- ☐ Quit the application you're working in, return to the Finder, and choose Shut Down from the Special menu.
- ☐ When you see the flashing disk icon on the Macintosh and the green light is steady on the Hard Disk 20, switch off the hard disk.

Never switch off the Hard Disk 20 while the green light is blinking. You may lose information on the hard disk.

- ☐ Switch off the Macintosh.





Connecting and Disconnecting Hardware

To avoid damaging the device you're working with, always switch off the Hard Disk 20 and the Macintosh before connecting or disconnecting hardware.

Adding On

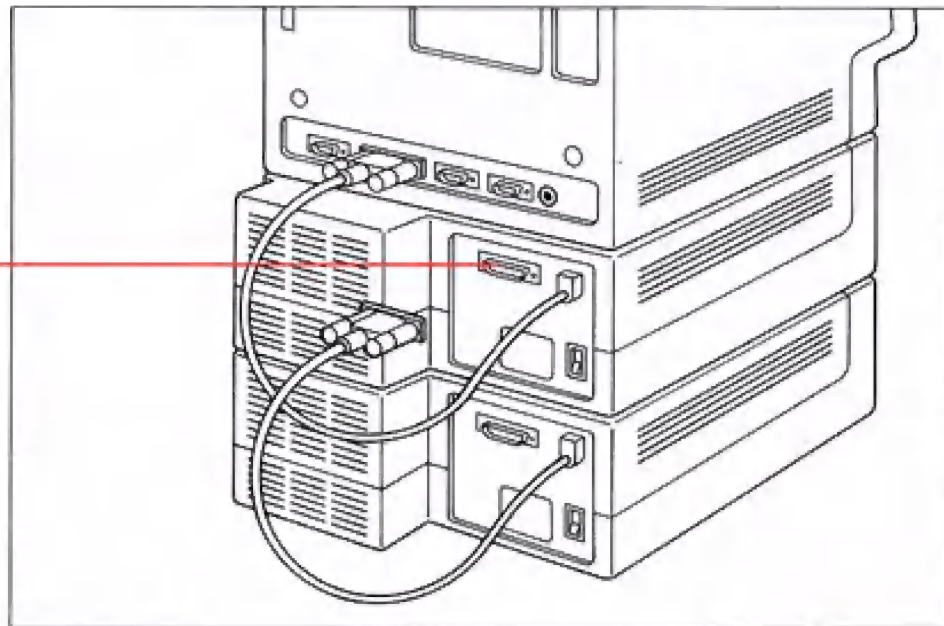
■ Adding a Second Hard Disk 20

You can add a second Hard Disk 20 or an external 3½-inch disk drive to your system by attaching one or the other to the Expansion port of the first Hard Disk 20. Also, you can attach other compatible devices, such as a tape backup device, to the Hard Disk 20's Expansion port.

You can place the second hard disk beneath the Macintosh or on the Macintosh's right side.

- **Switch off the first Hard Disk 20 and then the Macintosh (see "Switching On and Off" in this chapter).**
- **Attach the second Hard Disk 20 to the Expansion port of the first.**

Expansion port



- **Switch on both Hard Disk 20s, in either order.**
- **When both green lights are steady, switch on the Macintosh.**
- **Insert the Hard Disk 20 Startup disk in the internal drive.**

The first Hard Disk 20 appears on the desktop and the initialization message appears.

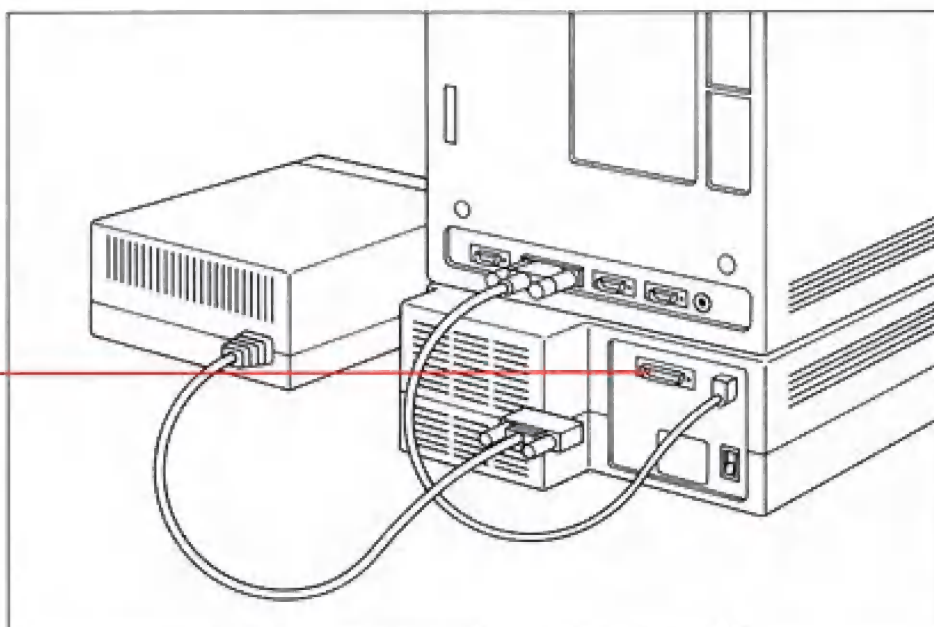
■ Adding an External 3½-Inch Disk Drive

If you have two linked Hard Disk 20s and are initializing them both at the same time, as soon as you initialize and name the first hard disk, the same initialization message appears referring to the second.

- **Switch off the Hard Disk 20 and then the Macintosh but leave both power cords plugged in. (See “Switching On and Off” in this chapter.)**
- **Attach the external 3½-inch disk drive to the Expansion port of the Hard Disk 20.**

Be sure to place the external drive on the Macintosh's right side.

Expansion port



- **Switch on the Hard Disk 20 and the Macintosh (see “Switching On and Off” in this chapter).**
- **Insert the Hard Disk 20 Startup disk in the internal drive.**

The Hard Disk 20 icon appears on the desktop along with any disk inserted in the external 3½-inch disk drive.

If you want to use the external drive without the hard disk switched on, you can do so by starting up the Macintosh with the Hard Disk 20 Startup disk. You'll be able to work with 3½-inch disks in the internal and external disk drives without the hard disk.

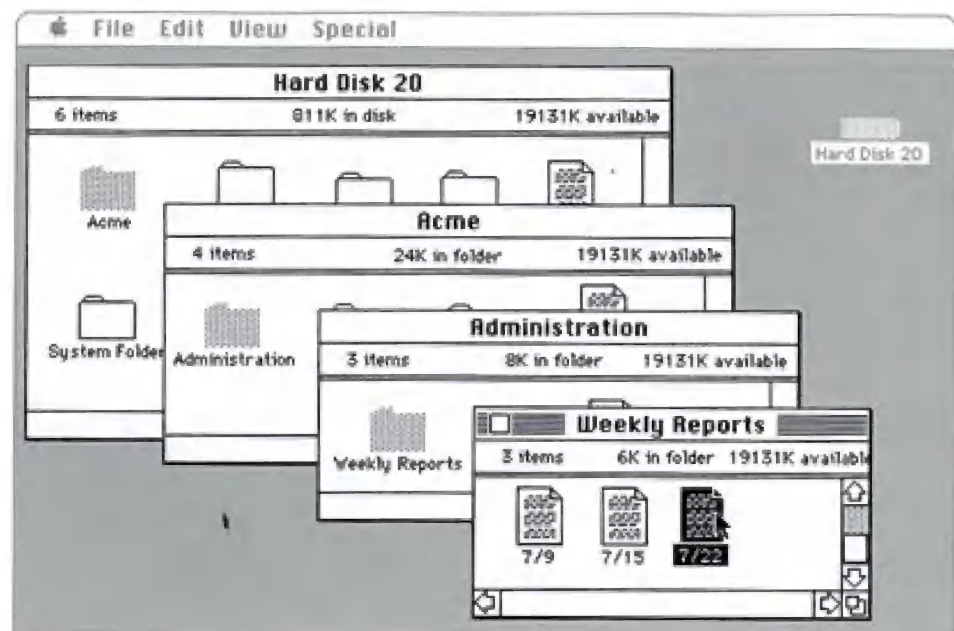
Chapter 2

Using the
Hard Disk 20

Finding Your Work

Now that you have 20 megabytes of storage, you can create hundreds, even thousands, of documents with many applications and store them all in one place. It's like having a multidrawer filing cabinet instead of a cardboard box.

With so much more room to accumulate and store information, it's particularly important for the Macintosh to help you find what you need quickly and easily. The Macintosh has always provided you with folders to organize your work. You can "nest" folders, one within the other, into a set of folders to organize your work in hierarchical levels. From the Finder you can open a folder within a folder, and so forth, until what you want is visible in a directory window on the desktop.



With the Hard Disk 20, the dialog boxes that appear when you choose Open and Save As within an application have been changed to let you see the disk directory or the folder directories you created in the Finder. You can search through folders to find a document you want or to find a folder you want to save to. Because these features are new with the Hard Disk 20, they aren't described in *Macintosh*, the owner's guide, or in the System Update (at your authorized Apple dealer in April 1985).

The Open... Command

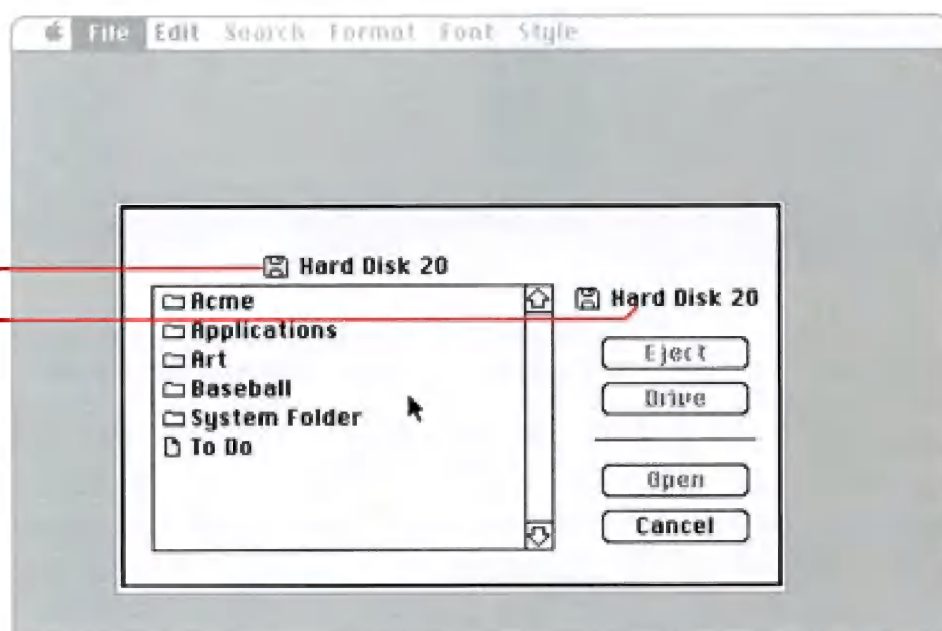
Within an application, choose the Open command from the File menu to open another document created by the same application or one that the application can use. These documents include those created by the application and others that the application can open, such as text-only documents. The open folder's name appears above its directory.

With the Hard Disk 20, choosing Open presents a dialog box that shows the folder or disk directory where you last opened or saved a document. The directory's name appears above it with an icon representing the open folder or the disk, depending on which type of directory is showing.

If the last document you opened or saved isn't in a folder, Open presents the disk directory, with its name and icon above it.

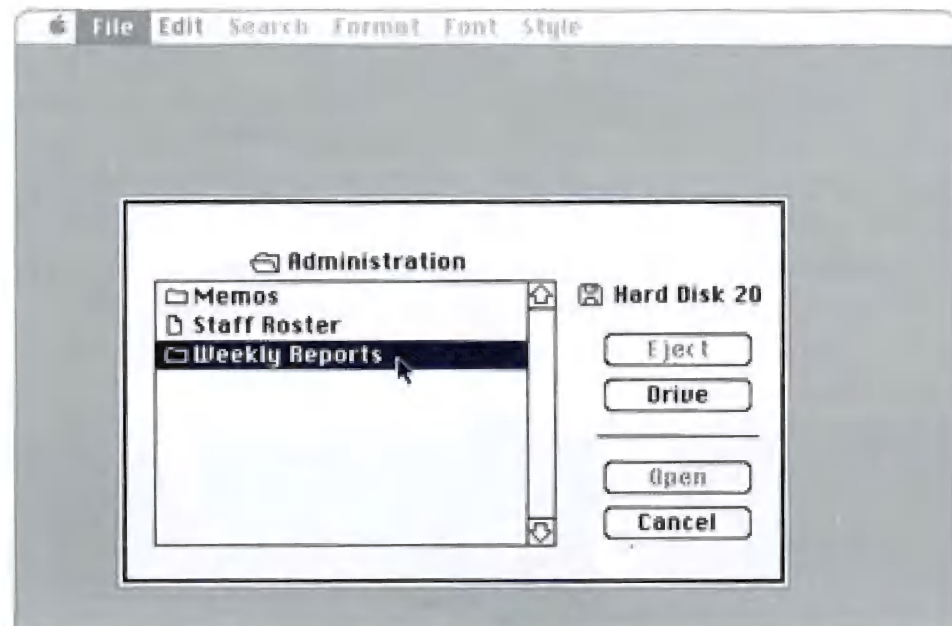
Directory name

Disk name



Within an application, the disk directory level is the same as the disk directory window in the Finder.

If the document you last opened or saved is in a folder, the Open dialog box presents that folder's directory showing other folders and any documents.

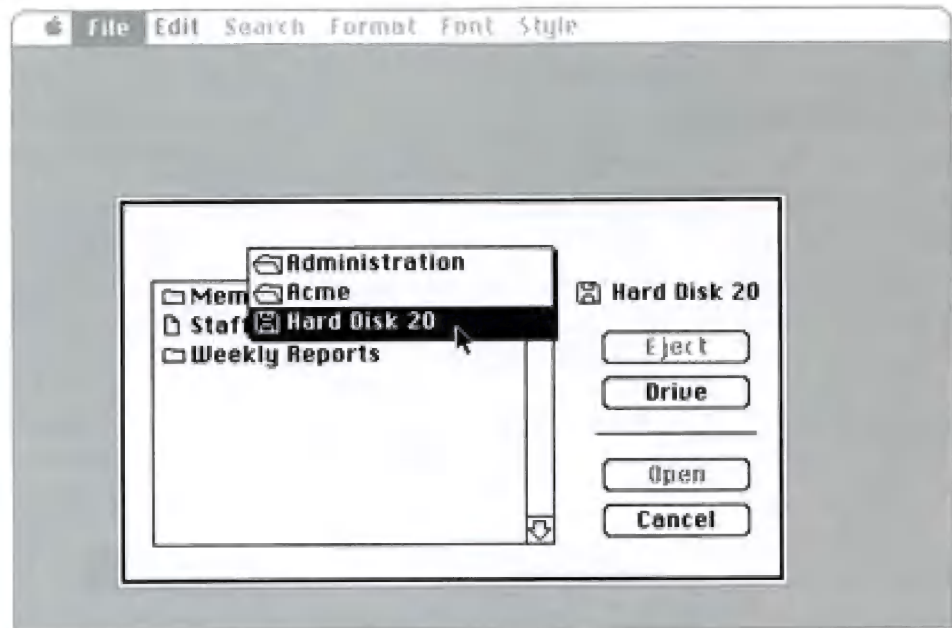


- **To open a document or folder in a directory, click the name and click Open, or simply double-click the name.**

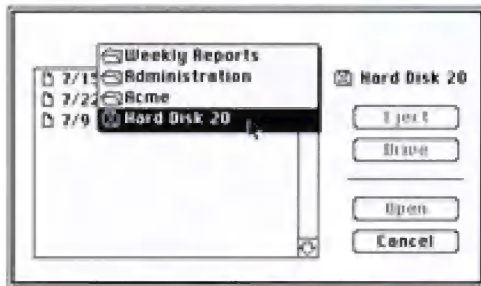
By opening a folder in a directory, you can move down as many levels of folders within folders as you've created.

From any open folder, you can move up levels of folders within folders, if there are any, to the top (the disk directory).

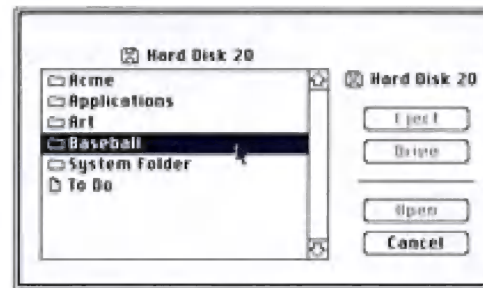
- To open the folder that contains the currently open folder, or to go to the disk directory, press the name above the directory and drag to the name you want.



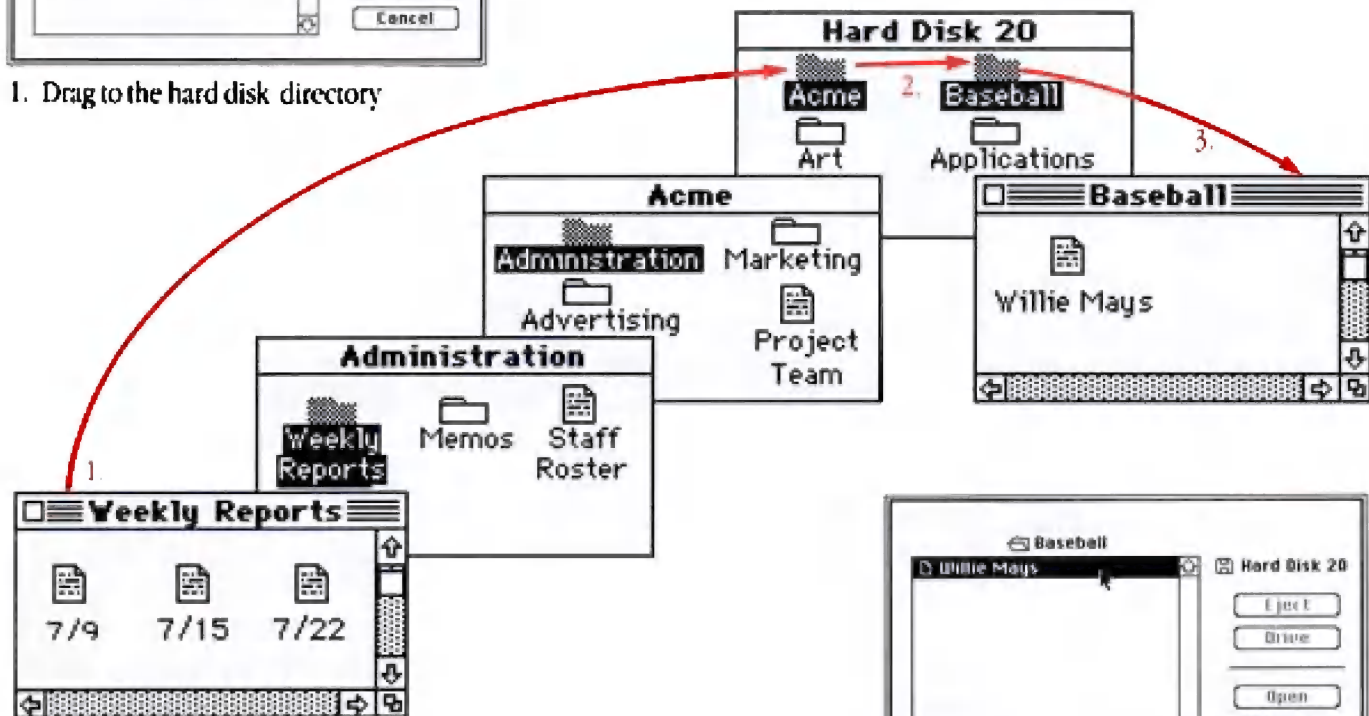
This pull-down list shows you the pathway from the disk directory to the currently open folder. If the open folder is in another folder and that one is in another, and so forth, each folder is listed, ending with the disk directory level. Each level contains the one above it in the list until you come to the open folder. You can drag to any folder name in the list to open it and see the contents of that folder, or you can drag to the disk name to see the disk directory. From the disk directory you can open another set of nested folders to look through.



1. Drag to the hard disk directory



2. Open another folder



3. Open the document you want

The Drive and Eject buttons let you open documents on other disks—another Hard Disk 20 if you’ve added one or a 3½-inch disk. See “Using 3½-Inch Disks or Another Hard Disk 20” in this section.

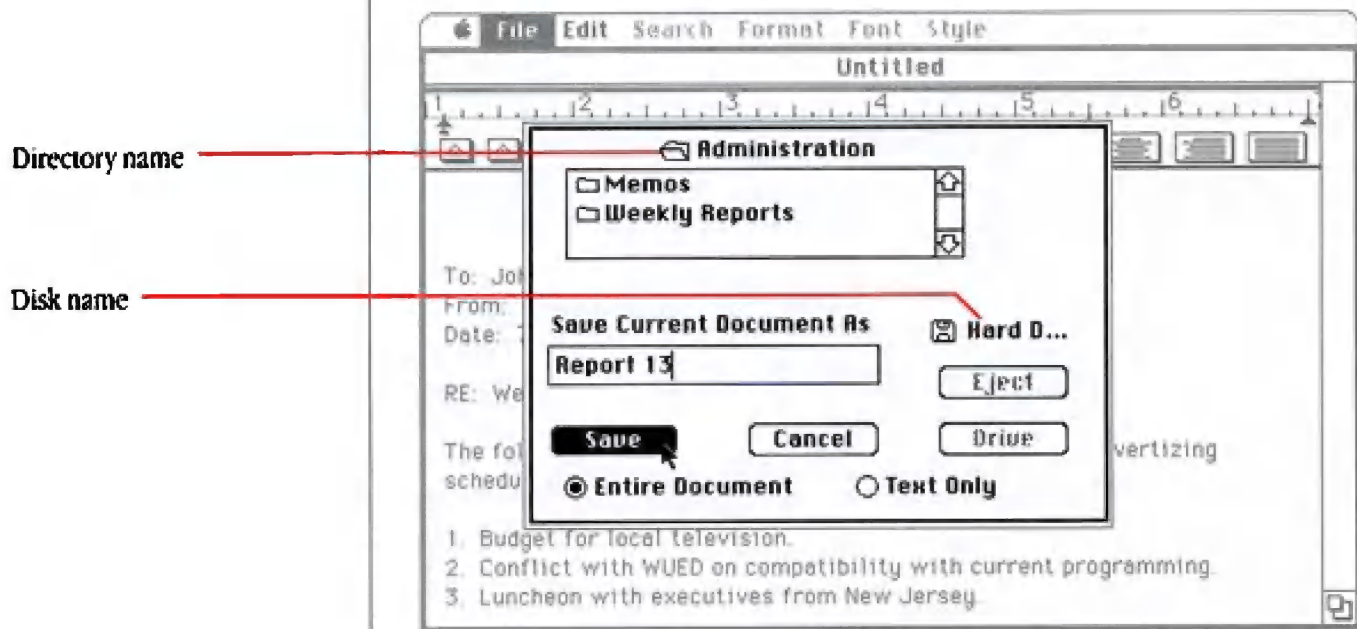
The Save As... Command

First read about the Open dialog box in “The Open Command” in this section. Both the Save As and Open commands let you move through levels of folders in the same way.

Choose Save As from the File menu to name your document for the first time or to change its name and save a copy of the document under a different name. (Use Save from the File menu to keep updating the same file you're working on.)

With the Hard Disk 20, you can save your document to any folder on the disk. Or, if you don't want to put it in a folder, you can save it to the disk directory or to a 3½-inch disk or second Hard Disk 20 (using Drive and Eject). You can also save your document under the same name in different directories (folders or the disk directory) on the Hard Disk 20—something you couldn't do before.

- **Click Save to save your document to the folder or the disk directory named above the directory.**



The directory's name appears above it with an icon representing it—either an open folder or the disk icon. The directory itself may appear empty; Save As presents only folders in a folder or disk directory (because of course you can't save a document to another document).

Save As presents the directory of the folder or disk where you last opened or saved a document.

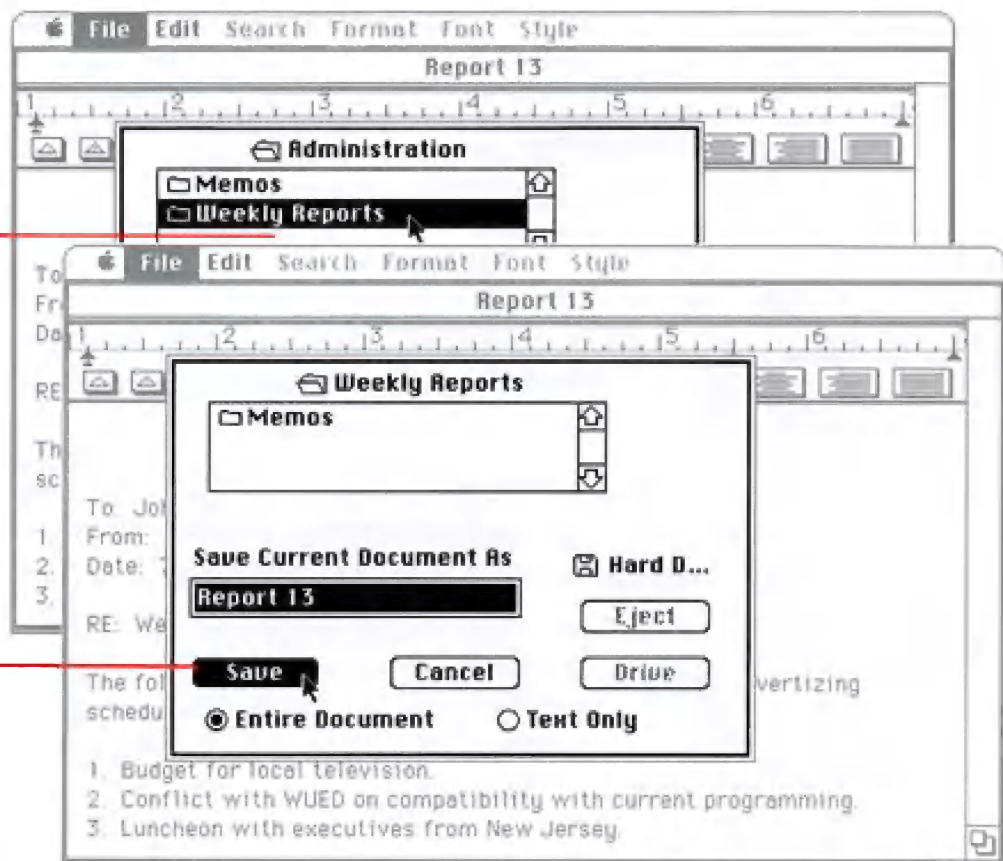
With many applications, you can have only one document open at a time. So the document you're saving is always the one you last opened or saved. When you choose Save As, you'll see the directory of the folder or disk the document came from, as you would expect. However, some applications allow you to have several documents open at a time. Because Save As presents the directory of the folder or disk containing the last document you opened or saved, that directory may not be the directory of the folder or disk you want to save to.

For example, suppose you've opened the documents Joe, Howie, and Fred, in that order, from different folders, and you choose Save As to change Howie's name. Save As shows you the directory of the folder Fred came from. If you don't want that directory, you can open any other until you have the one you want.

- **To save your document to a folder that's in the open folder, open the folder you want in the directory by double-clicking its name, and then click Save.**

Double-click on the folder you want to open

Click Save to save your document to the open folder

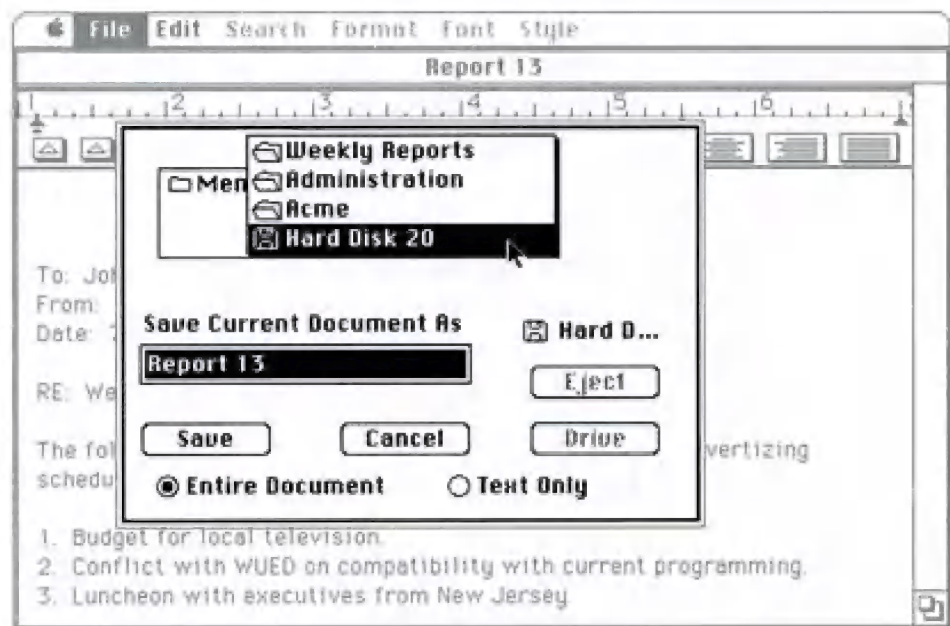


That name then appears above the directory of the folder now open. Any folders it contains are listed in the directory below. You can open and save to one of the folders or save to the folder currently open.

- **To save to the folder containing the open folder (or to the folder containing that folder), or to save to the disk directory, press the name above the directory and drag to the name you want.**

You can drag to any folder name in this list or you can drag to the disk name to see (and open) any folders in the disk directory.

In the disk directory, you can open another folder or nested set of folders.



- **When you've opened the directory you want and its name appears above the directory, click Save.**

The Drive and Eject buttons in the Open and Save As dialog boxes let you switch to other disks. (Instead of clicking Drive, you can use the Tab key to switch to other disks.) If you switch to a document on another Hard Disk 20, the Open and Save As dialog boxes remain the same.

If you switch to a document stored on a 3½-inch disk, Open and Save As work as described in *Macintosh*, the owner's guide, and in the System Update (a free system update distributed to your authorized Apple dealer in April 1985). Open presents a directory of all the application's documents on the 3½-inch disk and ignores the folders they're in. Save As lets you rename the document and save to another disk if you wish. You can't save two documents with the same name to the same 3½-inch disk, even if they're in different folders.

With the System Update, the Open dialog box lets you select a document from the directory by typing. As you type the first character of the document's name and continue typing, Open selects any document that matches the characters you type. If you pause while typing, the next character is considered a new request, rather than a continuation of your first request. The keyboard touch (which you set in the Control Panel) determines how long the Macintosh waits for additional characters in a single request.

Backing Up Your Work

Your Hard Disk 20 holds precious cargo—a lot of it. If you think of the effects of losing even one tenth of what you can store on the hard disk, you'll back up your hard disk often.

The number of files—documents, applications, system files, and so forth—you can back up on a disk depends on the size of the file and on the amount of storage available on the destination disk (the disk you're copying to). A 3½-inch disk has 400K of storage. You can find out the size of a file by selecting it and choosing Get Info from the File menu, although the Macintosh alerts you if the selected files won't fit on the destination disk.

To copy your files to a 3½-inch disk, select the files you want and drag the files to the disk icon. Because of the difference in storage capacity, you can't copy the Hard Disk 20 by dragging its icon to a 3½-inch disk. See "Copying a Document, Folder, or Application to a Different Disk" in *Macintosh*, the owner's guide, for instructions on copying files to another disk.

About the New Finder

The new Finder version 5.0, described in this section, has many of the same features as Finder version 4.1 (available in the System Update at your authorized Apple dealer since April 1985). If you have used that Finder, some of the features described here may be familiar to you. Remember, though, *you must use Finder version 5.0 with the Hard Disk 20*. (The Finder's version number appears in About the Finder from the Apple menu.)

Where System Software Lives

On the Hard Disk 20, the System file and the Finder must be in the same folder or the Macintosh may eventually have a serious system error.

A Note For Advanced Users

The new Hard Disk 20 software allows you to have several System files on the Hard Disk 20 as long as each System file (with its Finder) is in a different folder. This capability is useful if you want to specially configure the System file's fonts and desk accessories for a specific application. Just remember, you can modify and use only the Hard Disk 20's System file. (The Hard Disk 20's System file is identified by its creation date—September 1, 1985—found in Get Info from the File menu.)

To avoid confusion, keep the specialized System file in the folder with the application it's configured for, and be sure a copy of the Finder is there, too.

To switch to another System file on the Hard Disk 20, drag the System file out of its folder, release it, and drag it back in. The Macintosh uses that System file when you start an application.

To switch back to the main System file in the System Folder, drag it out of its folder and back.

Current Startup Disk

The current startup disk is the one whose system files the Macintosh is currently using. Its icon always appears in the upper right corner of the desktop when you're in the Finder.

With the Hard Disk 20, the hard disk remains the current startup disk even when you open an application from another startup disk. If you have two Hard Disk 20s, the hard disk (with the System file and Finder) attached to the Macintosh's Disk Drive port is the current startup disk.

Although you'll rarely need to, you can tell the Macintosh to switch from the Hard Disk 20 to another startup disk—a 3½-inch disk or another Hard Disk 20 (with a System file and Finder).

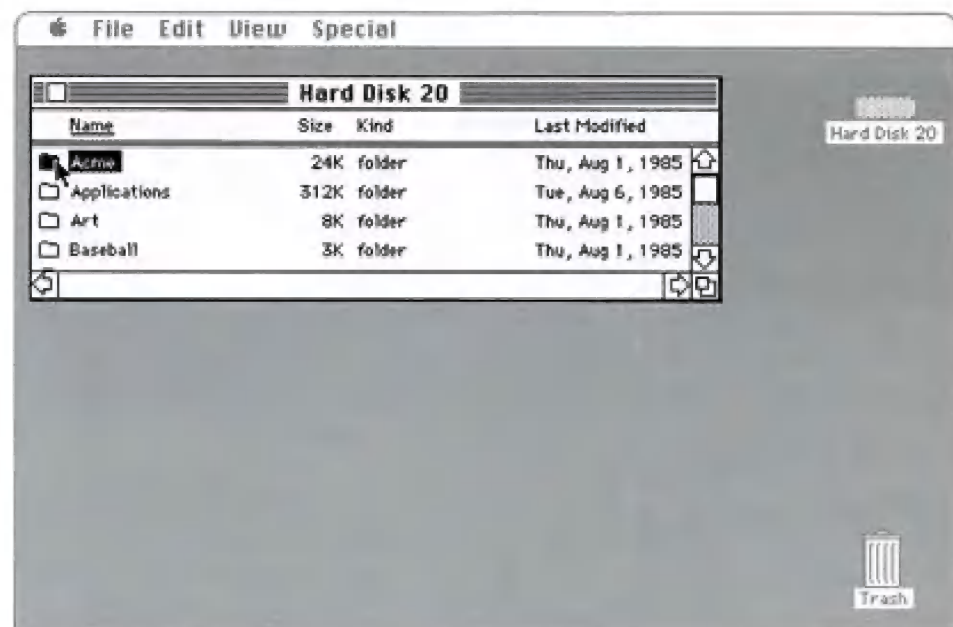
- ☐ Insert the startup disk you want.
- ☐ Hold down the Option key and double-click on the application icon or name (if in a text view) on the startup disk you want to make current.

The application opens a new document and that disk is now the current startup disk. Its icon appears in the upper right corner of the Finder desktop.

If you start an application from a Hard Disk 20, it becomes the current startup disk again until you switch to another startup disk using the procedure just described.

Full Capabilities in Any View

You can duplicate, move, rename, or discard documents, folders, and applications with your disk directories in any arrangement—by icon or by name, date, size, or kind. In any of the text views (any view other than by icon), a small icon appears to the left of the document name in the directory window. Click, double-click, drag, or Shift-click this icon just as you would its counterpart in an icon view of the directory.



To rename a document when a directory window is in text view, select the name and edit it just as you edit icon names in an icon view or on the desktop.

Directories in text views also indicate (with a small padlock on the right) which of your documents are locked. If you physically lock the disk, the padlock appears in the top left corner just below the title bar in all directory windows that appear on the desktop.

■ Dragging Icons

You can drag an icon either to a disk directory window or to the hollow icon that remains behind when you open an icon. (Before Finder version 4.1, you could drag only to the icon's directory window.) If you drag to a directory window, you can place the icon wherever you want it; if you drag to a hollow icon, the Finder will place the icon in the next available spot in the directory.



■ Naming Icons

To edit an icon's name, you now click explicitly on an icon or icon name, even if the icon is already selected. (Before Finder version 4.1, typing renamed any selected icon, whether you had explicitly clicked it or not.) This means you're less likely to rename disks accidentally. There are a couple of exceptions: When you create a new folder by choosing New Folder, or when you duplicate or move a document, folder, or application, typing renames what's selected, without your having to click it first. (This is true in text views as well.)

Ejecting Disks

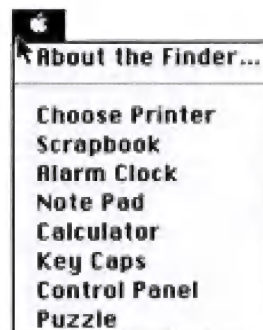
Obviously, you can't eject the Hard Disk 20. The Eject command from the File menu is dimmed (disabled).

If you're using a 3½-inch disk, choosing Eject from the File menu ejects one inserted disk, selected or not. Eject first ejects any selected disk. If none is selected, it ejects the disk in the internal disk drive before looking in the external disk drive. If you have two 3½-inch disk drives and had had two 3½-inch disks inserted, and you've ejected one, choosing Eject again ejects the other one.

Using Eject keeps the dimmed disk icon on the desktop, available for the Macintosh to ask for. If you've finished your work with a 3½-inch disk, you can tell your Macintosh to forget about the disk (and not ask for it again) by dragging the disk icon to the Trash. This doesn't erase the disk; it just ejects it and removes the icon from the desktop. Also, you can drag a 3½-inch current startup disk to the Trash. The disk is ejected but not forgotten (its dimmed icon remains on the desktop).

You can't edit the comment box (in the Get Info window) of an ejected disk or of any document on that disk.

The Apple Menu



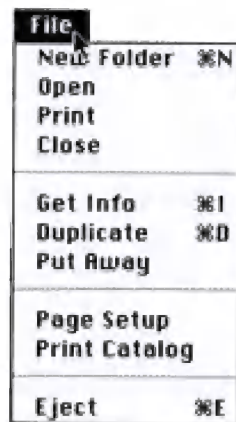
About the Finder

The About the Finder command from the Apple menu now tells you the memory size of the Macintosh you're using.

Choose Printer Desk Accessory

The Choose Printer desk accessory is available from the Apple menu both in the Finder and in any application started with the Hard Disk 20. See "About the Choose Printer Desk Accessory" in this chapter.

File Menu



New Folder

The New Folder command creates a new folder named Empty Folder (so you no longer have to duplicate an existing folder). You can rename the folder immediately after you create it by typing the name you want. Rename the folder any other time by selecting the name or icon and editing it in the usual way.

New folders appear in the active (frontmost) directory window on the desktop. The New Folder command is dimmed if no directory windows are open.

Put Away

The Put Away command returns a file or folder from the Finder's desktop or the Trash back to where it came from on the disk.

Page Setup

The Page Setup command lets you set up the orientation and size of disk or file directories you print using the Print Catalog command. In the Finder, this command works only with the Print Catalog command; a document's page setup is controlled by the Page Setup command in the application that created the document.

Print Catalog

The Print Catalog command prints the contents of the active directory window—in whatever view you have the directory arranged.

Close All has been removed from the File menu.

- **To change what's in the MiniFinder, click the Finder button to return to the Finder, select the applications and documents you want in the MiniFinder, choose Use MiniFinder, and click Install.**
- **To stop using the MiniFinder, return to the Finder, choose Use MiniFinder, and click Remove.**

Dragging the MiniFinder icon to the Trash also removes the MiniFinder.

You can install the MiniFinder on any of your disks that contain applications, even if they're not startup disks. When you start up your Macintosh, it uses any MiniFinder it can find, even if it's not on the startup disk.

Shut Down

Shut Down ejects any inserted disks (first saving any necessary information) and then restarts the Macintosh. With Hard Disk 20, Shut Down simply saves necessary information and then restarts the Macintosh.

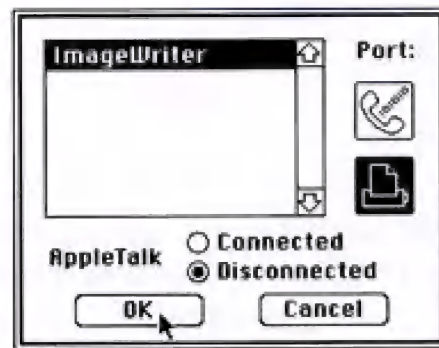
Lost Folders

With 3½-inch disks, if the Finder has an error and can't reconstruct your folders exactly as they were, the top level of the folder hierarchy will be remembered (although the names will be lost and the folders will be renamed #1, #2, and so forth).

About the Choose Printer Desk Accessory

The Choose Printer desk accessory lets you print from any attached printer that has a printing resource file in the same folder as the System file and Finder on the Hard Disk 20 (or other current startup disk). A printing resource file (sometimes called a driver) is a system file that usually has the same name as the printer itself.

If you're using an ImageWriter only, you probably won't use the Choose Printer desk accessory. The Macintosh is preset to print documents on an ImageWriter connected to the Printer port. You'll use Choose Printer only if you connect an AppleTalk™ Personal Network or another device to the Printer port or want to designate the Modem port for the ImageWriter.



Printers other than the ImageWriter, such as the LaserWriter™, include disks containing a Printer Install application that installs the printing resource file for that printer. See "Installing the LaserWriter" below. Once you install the printer on a disk and physically connect it to your Macintosh, it appears as a candidate to use when you choose Choose Printer.

Installing the LaserWriter

If you want to install the LaserWriter on the Hard Disk 20, you must make the LaserWriter Installation Disk the current startup disk. To install the LaserWriter:

- ☐ Start up your Macintosh and Hard Disk 20; see “Switching On and Off” in Chapter 1.
- ☐ Insert the LaserWriter Installation Disk in the internal drive and open the disk directory window.

You can use the external 3½-inch disk drive if you’ve added one to the Hard Disk 20.

- ☐ Hold down the Option key while you double-click Printer Installer.

Now follow the installation instructions in *LaserWriter*, your printer manual.

- ☐ When the installation is complete, restart the Macintosh with the Hard Disk 20 Startup disk.
- ☐ In the Finder, move the printer resource icons—LaserWriter and LaserWriter Prep—to the folder containing the System file and Finder.

About the Font and Desk Accessory Mover

As new fonts and desk accessories become available, you may want to take advantage of your 20 megabytes of storage and add some of them to the Hard Disk 20. The Font and Desk Accessory Mover (Font/DA Mover) is an application for copying fonts and desk accessories among disks or removing them from disks.

The Hard Disk 20 requires the Font/DA Mover version 2.0 found on the Hard Disk 20 Startup disk.

The Apple and Fonts menus in any application always contain the desk accessories and fonts in the current startup disk's System file (a file in the System Folder). You can also store collections of fonts and accessories in special files the Macintosh uses just for that purpose. When you want to use the fonts or accessories in those files with an application, you use Font/DA Mover to add them to the Hard Disk 20's System file.

Although you can store a large number of fonts in Hard Disk 20's System file, you can have only as many fonts available at one time in an application as will fit in the application's Font menu. (This number varies, depending on the application.) If an application can't show all the fonts in the System file, the application randomly chooses the fonts it shows. You're limited to 15 desk accessories in a disk's System file.

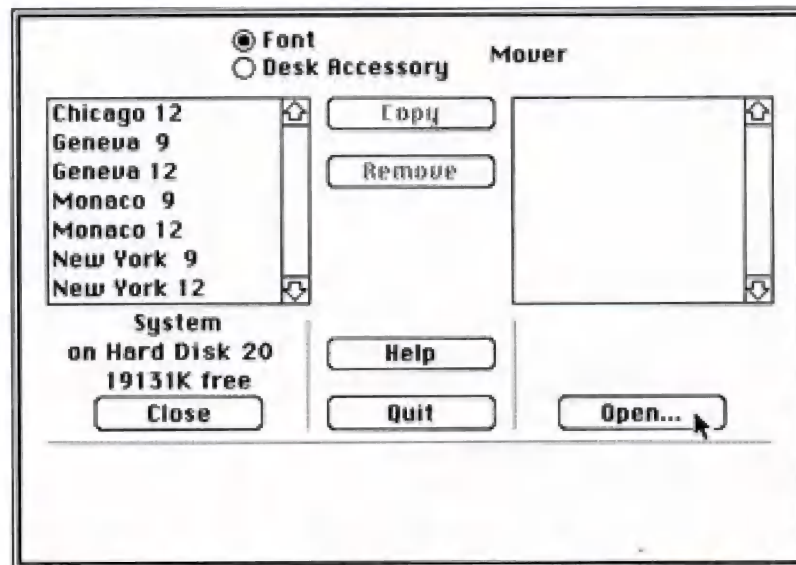
You may want to duplicate the System file and use Font/DA Mover to configure the System file specifically for an application (for example, perhaps you want six specific fonts in an application). See "Where System Software Lives" in this chapter for an explanation of multiple System files on the Hard Disk 20.

Adding or Removing Fonts or Desk Accessories

- **If you're adding fonts or desk accessories to your Hard Disk 20, insert the disk containing the fonts or desk accessories you want to copy.**
- **Open Font/DA Mover version 2.0.**

Font/DA Mover version 2.0 is identified by its creation date—September 1, 1985—found in Get Info from the File menu.

Select the icon and choose Open from the File menu, or just double-click the icon.



- **Click either the Font or the Desk Accessory button, depending on which you want to add or remove.**

The list on the left includes all fonts or desk accessories in the System file or the Hard Disk 20 (or other current startup disk). The list on the right includes fonts or desk accessories in the System file on any other inserted startup disk.

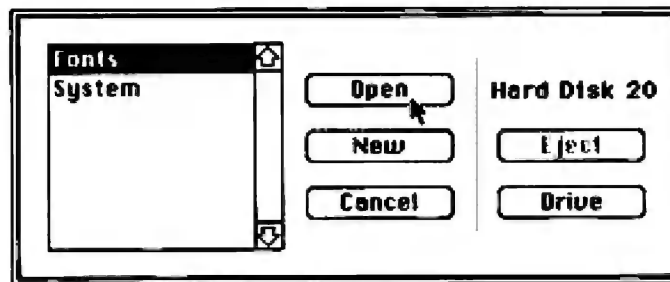
- **Use the Open buttons to present lists of any other font or desk accessory files on any inserted disk.**

If necessary, first click Close to close the file currently displayed. Each Open button lets you control what's displayed in its list. Both the file you're looking at and the disk it's on are shown below each list.

Whenever you click an Open button, a dialog box with a list of files appears.

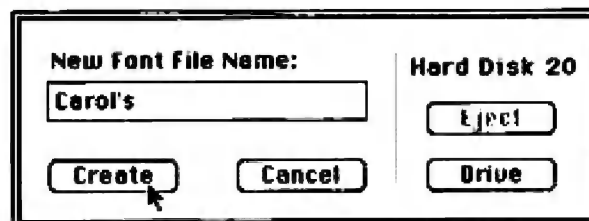
Use the Eject or Drive buttons to look at font or desk accessory files on other disks or other files on the same disk. The name of the disk you're looking at is always shown in the top right.

- **Open the file you want to look at by selecting its name and then clicking Open.**

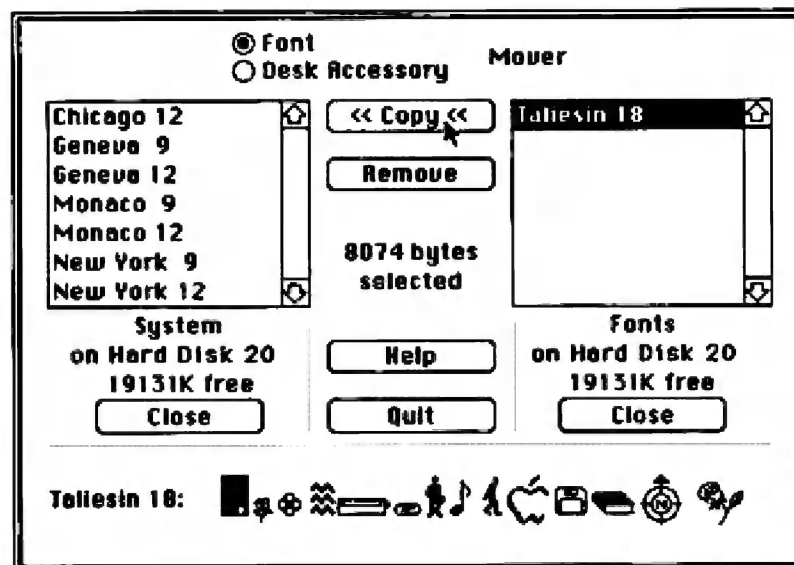


You can look at and work with any existing System, font, or desk accessory files.

- Or create a new file for your own collection of fonts or accessories by clicking New, naming the file, and clicking Create.



- Select the fonts or desk accessories you want to copy or remove.



Maintenance

Operating Environment

Your Hard Disk 20 can operate effectively in about the same temperature and humidity as you can: 50 to 104 degrees Fahrenheit and 20 to 80 percent relative humidity.

Be careful to protect the hard disk from spilled liquids and hazardous vapors. Spilling any liquid inside, or allowing the disk drive to be exposed to chemical or solvent fumes (including steam from a coffee maker), can harm it.

Cleaning

To clean the outside of the disk drive, just wipe it with a soft, damp cloth. To remove stains or dirt, add a drop of liquid detergent to the cloth and wipe the surface of the disk drive.

Troubleshooting

The Problem

Occasionally you may have problems while using your Hard Disk 20. This section presents the most common problems and steps you can take that will usually correct them. If after following the steps in this section you are still having difficulties, contact your authorized Apple dealer for assistance.

Your Hard Disk 20 Doesn't Switch On

If the green light doesn't light up, first make sure all cables are properly connected. If the disk drive still doesn't run, use the Hard Disk 20 Test, described below. If the Hard Disk 20 fails the test, see your authorized Apple dealer (see Appendix B, "Service and Support").

Warning: *Never try to remove the cover from the main unit. The Hard Disk 20 contains high-voltage components that retain an electrical charge, even after the unit is switched off.*

Your Hard Disk Doesn't Initialize

Use Hard Disk 20 Test, described in this section, to determine if the hard disk is faulty. If the Hard Disk 20 is connected properly and still fails the test, your hard disk is the problem; if it passes, the Hard Disk 20 Startup disk is the problem. See your authorized Apple dealer for replacement and repairs.

Your Hard Disk 20 Icon Doesn't Appear on the Finder Desktop

You may have started up your Macintosh first and then the Hard Disk 20. Always switch the hard disk on or off before switching the Macintosh on or off.

The Hard Disk 20 Finder Doesn't Appear Correctly

When you start up the Macintosh with the Hard Disk 20 Startup disk, the startup disk prepares the Macintosh to use the hard disk and starts the Hard Disk 20 Finder and System file. If the System file is damaged on the Hard Disk 20, you'll encounter problems, such as distortion or a serious system error, after the disk ejects and before the Finder is fully present—before the wristwatch turns into a pointer.

You can replace a damaged System file on the Hard Disk 20 with a copy of the one on the Hard Disk 20 Startup disk. Make the Hard Disk 20 Startup disk the current startup disk (with the following instructions). Then drag the System file to the Hard Disk 20, replacing what's there.

- ☐ Switch off the Macintosh, insert the Hard Disk 20 Startup disk in the internal disk drive, and switch the Macintosh on again.
- ☐ When you see "Welcome to Macintosh," hold down the mouse button until the Finder appears and the wristwatch turns into a pointer.

The Hard Disk 20 Startup disk is now the current startup disk. Drag the System file in the System Folder to the Hard Disk 20, replacing the one there. Be sure you drag the System file to the folder containing the Finder or to the disk directory window if the Finder isn't in a folder. The two files must always be together in the same place.

An Application Doesn't Work Correctly

If you experience difficulty opening an application that's in a folder, move the application, its documents, and any other files associated with it out of the folder to the disk directory.

Using Hard Disk 20 Test

Hard Disk 20 Test, an application on your Hard Disk 20 Startup disk, can tell you whether your hard disk is working at peak performance or needs service. You may want to use it every month or so to avoid unexpected loss of data.

Hard Disk 20 Test runs a test on the hard disk and tells you whether the hard disk is OK. (Hard Disk 20 Test tests hardware; it can't tell you anything about software problems.) A failure means something isn't working properly—even though you may not notice anything wrong. Have your Hard Disk 20 checked by an authorized Apple dealer if it fails the test.

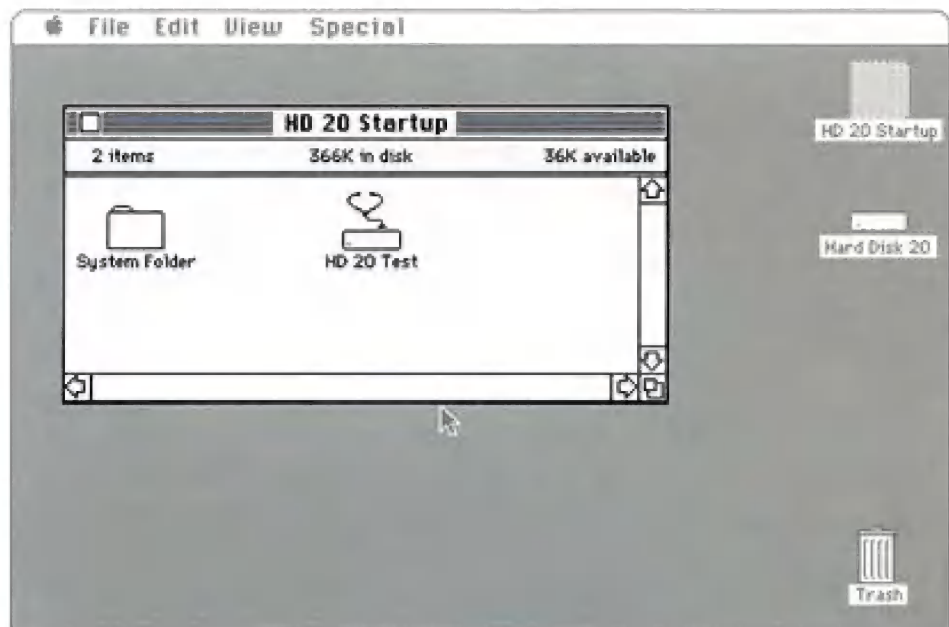
The test takes about 15 minutes, and tests the hard disk attached to the Macintosh's Disk Drive port. If you have two Hard Disk 20s, connect and test each one separately.

■ Insert the Hard Disk 20 Startup disk in the internal disk drive.

If you start the Macintosh with the Hard Disk 20 Startup disk and a problem arises after the disk is ejected but before the Finder is present and the wristwatch has become a pointer, you'll need to make the Hard Disk 20 Startup disk the current startup disk. Use the following instructions:

- ☐ Switch off the Macintosh, insert the Hard Disk 20 Startup disk in the internal disk drive, and switch the Macintosh on again.
- ☐ When you see "Welcome to Macintosh," hold down the mouse button until the Finder appears and the wristwatch turns into a pointer.

The Hard Disk 20 Startup disk is now the current startup disk.



If the hard disk is working, you can simply insert the disk in the internal disk drive.

- **Open Hard Disk 20 Test on the Hard Disk 20 Startup disk.**
- **Click Start.**

When the test is complete, a message tells you if the hard disk passed or failed.

Appendixes

Appendix A

Hard Disk 20 Specifications

Height, Width, Depth:	78.5, 246, 266 mm; 3.1, 9.7, 10.5 in
Weight:	3.2 kg (7 lb)
Temperature:	operating: 10 to 40 degrees C (50 to 104 degrees F)
	storing: -40 to 50 degrees C (-40 to 122 degrees F)
Relative Humidity (noncondensing):	20 to 80%
Altitude:	-1000 to 10,000 feet
Input Power:	Line Voltage: 85 to 270 volts AC, RMS
	Frequency: 47 to 64 Hz
	Power: 30 watts
Storage:	Data capacity (formatted): 20,769,280 bytes
	Bytes per block: 532 (512 user data, 20 system data)
	Total disk blocks: 39,040
	Drive startup time: 15 seconds
	Drive spin-down time: 25 seconds
	Transfer rate: 7.5 million bits per second
Interface:	19-pin interface to the Macintosh compatible with external disk drive, 500K bits per second
	19-pin Expansion port compatible with Macintosh external disk drive, 500K bits per second

Appendix B

Service and Support

To help you get the best possible performance from your system, Apple Computer, Inc., has established a worldwide network of full-support authorized Apple dealers. Your local dealer has a complete package of services to offer you. Each has an authorized Service Center with specially trained technicians. The center is equipped with the latest diagnostic programs and an inventory of replacement parts so you'll get fast and efficient service.

If you have problems with your Hard Disk 20, become thoroughly familiar with your manual. Then, if you still have questions, call on your dealer for assistance.

Your dealer has the latest information on new hardware and software products and will keep you informed about any product updates. If you want to upgrade your system, your dealer can help you select compatible components.

There are more than 4000 authorized Apple dealers and Service Centers throughout the world. For the location nearest you, in the United States call (800) 538-9696. Or, if you prefer, write to

Apple Computer, Inc.
Attn: Customer Relations
20525 Mariani Avenue
Cupertino, CA 95014

AppleCare

Your Hard Disk 20 comes with a 90-day warranty. You can add 1 year to this protection with AppleCareSM—a one-time cost, carry-in service plan. It combines convenient service with fast turnaround.

Your AppleCare agreement will be honored at all authorized Apple dealers within the country of purchase—added insurance should you relocate. Ask your local authorized Apple dealer for details.

You may purchase AppleCare at any time through your Apple dealer, but for uninterrupted protection, it's a good idea to buy it along with your system. Besides providing you with the complete coverage, purchase of AppleCare with your system avoids an owner-paid dealer inspection of your system if your warranty has expired.

Appendix C

Radio and Television Interference

The Hard Disk 20 generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with Apple's instructions, it may cause interference to radio and television reception.

Your Hard Disk 20 has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there's no guarantee that the interference won't occur in a particular installation, especially if a "rabbit ear" TV antenna is used. (A rabbit ear antenna is the telescoping-rod type usually contained on TV receivers.)

You can find out if your disk drive is causing interference by turning it off. If the interference stops, it was probably caused by the Hard Disk 20.

To further isolate the problem, disconnect the peripheral devices and their cables one at a time. If the interference stops, it is caused by either the peripheral device or its cable. These devices require shielded cables. For Apple peripherals, you can obtain the proper shielded cable from your dealer. For non-Apple peripherals, contact the manufacturer or dealer for assistance.

If your Hard Disk 20 causes interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- ☐ Turn the TV or radio antenna until the interference stops.
- ☐ Move the Macintosh and the hard disk to one side or the other of the TV or radio.
- ☐ Move the Macintosh and the hard disk farther away from the TV or radio.
- ☐ Plug the hard disk into an outlet that is on a different circuit from the TV or radio. (That is, make certain the hard disk and the TV or radio are on circuits controlled by different circuit breakers or fuses.)
- ☐ Consider installing a rooftop TV antenna with coaxial cable lead-in between the antenna and TV.

If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission:

"How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from

U.S. Government Printing Office
Washington, DC 20402
Stock Number 004-000-00398-5

Appendix D

Safety Information

Warning: *Never* try to remove the cover from your Hard Disk 20. The Hard Disk 20 contains high-voltage components that retain an electrical charge, even after the unit is switched off.

Important Safety Instructions: The Hard Disk 20 is intended to be electrically grounded. It's equipped with a three-wire, grounding-type plug, a plug having a third (grounding) pin. This plug fits only into a three-prong (grounding-type) AC outlet. This is a safety feature. If you can't insert the plug into the outlet, have a licensed electrician replace the outlet and, if necessary, install a grounding conductor. Do not defeat the purpose of the grounding-type plug.

Glossary

3½-inch disk

See disk.

19-pin connector cable

The cable on the back of the Hard Disk 20 that connects to the 19-pin Disk Drive port on the back of the Macintosh.

antistatic bag

Protects the connector from static electricity that can accumulate during transportation.

AppleTalk Personal Network

A collection of computers and accessories, such as printers, linked together by means of connectors and cables. Specially designed software allows the devices on the network to send and receive information.

current startup disk

The disk whose System file and Finder the Macintosh is currently using to open applications and documents. The fonts and desk accessories in the System file of the current startup disk are the ones available to the application you are working in. The icon for the current startup disk is located in the upper right corner of the desktop.

device

Any piece of equipment that can be attached to a Macintosh.

desk accessories

“Mini-applications” that are available from the Apple menu whether you are working in the Finder or an application. Examples are Choose Printer, the Calculator, and Note Pad. Desk accessories reside in the System file.

directory

A pictorial, alphabetical, or chronological list of the contents of a folder or of the disk directory window.

disk

The magnetic medium on which the Macintosh stores information. The Macintosh can use the 3½-inch disks that you insert in a disk drive or a hard disk.

disk drive

The mechanism that holds the disk, retrieves information from it, and saves information to it. A hard disk drive has the disk permanently encased. A 3½-inch disk drive requires that you insert a 3½-inch disk.

Disk Drive port

A 19-pin socket on the back of the Macintosh marked by an icon representing a 3½-inch disk drive.

Expansion port

A 19-pin socket on the back of the Hard Disk 20 to which you can attach devices such as another Hard Disk 20, an external 3½-inch disk drive, or a tape backup device.

external 3½-inch disk drive

See disk drive.

files

A collection of information stored on a disk—a document, a system file like the Finder or System file, an application, and so forth.

Finder

An application that's always available on the desktop. You use it to manage documents and applications and to gain access to disks.

folder

A holder of files on the desktop. Folders allow you to organize information any way you want and are accessible within applications if they are stored on a hard disk.

font

A collection of letters, numbers, punctuation marks, and other typographical symbols with a consistent appearance. An example of a Macintosh font is New York.

hard disk

See disk drive.

initialize

To prepare a disk to receive information.

magnetic interference

Interference with the behavior of magnetic storage devices such as disk drives. Magnetic interference can be caused by the Macintosh power supply, located on the left of the Macintosh, forming a local magnetic field.

megabyte

Approximately one million bytes (1,048,567) of information. A 20-megabyte hard disk holds 20 million bytes of information, or 20,000 kilobytes (20,000K).

port

The metal sockets on the back of the Macintosh, such as the Disk Drive port and the Printer port, into which you plug connector cables such as the 19-pin connector cable from the back of the Hard Disk 20.

resource software

Software (sometimes called a driver) that the Macintosh uses to work with a device, such as a hard disk or printer.

startup disk

A disk with all the necessary files to start up the Macintosh and use the Finder and one or more applications.

System file

A collection of desk accessories, fonts, and other basic information that is of general use by the Finder and other applications.

tape backup device

A device that lets you back up the entire contents of the hard disk to a high-density tape medium.

Index

A

About the Finder command 27
adding
 desk accessories 33-36
 disk drives 10-11
 fonts 33-36
Apple menu 27
AppleTalk 31
applications, copy-protected 7

B

backing up 23

C

changing
 disk drives 22
 startup disk 25
Choose Printer desk accessory 31
cleaning 38
commands *See* specific command
comment box 27
connecting 2-3
 hardware 9
copy-protected applications 7
copying 7, 23
current startup disk 24-25

D

desk accessories 31, 33-36
directories 14-18, 19-21, 22, 25-26
directory window 16, 25-26
disk(s)
 copying 23
 ejecting 22, 27, 30
 locking 26
 naming 5
 startup 24-25
disk drive(s)
 adding 10-11
 changing 22
 external 3 ½-inch 11, 22, 23

documents
 copying 23
 locking 26
 naming 19, 26
 opening 15-17
 saving 19-21, 22
 selecting by typing 22
 text-only 15
dragging icons 26
Drive button 22

E

Eject button 22
Eject command 27
environment, operating 38
external 3 ½-inch disk drive 22
 adding 11
 copying to 23

F

file(s)
 copying 7, 23
 System 33-36, 39-40
File menu 28
Finder 24-30
 problems with 39-40
folder(s)
 directories 14-18, 19-21, 22, 25-26
 locking 26
 nested 14, 17-18
 opening 15-17
 saving to 19-21, 22
Font/DA Mover 33-36
fonts 33-36

G

Get Info command 23
Get Info window 27

H

handling 2
Hard Disk 20 Test 40-41
hardware, connecting 9

I, J, K

icon(s)
 dragging 26
 naming 26
 view 25-26
ImageWriter, installing 31
initializing 5, 11
 problems with 39
installing printers 31-32

L

LaserWriter, installing 32
locking 26

M

maintenance 38
MiniFinder 29-30
Modem port 31
modified System file 7, 24

N

naming
 disks 5
 documents 19, 26
 icons 26
nested folders 14, 17-18
New Folder command 28

O

Open command 14, 15-17, 22
operating environment 38

P, Q

padlock 26
Page Setup command 28
Print Catalog command 28
Printer port 31
printers, installing 31-32
Put Away command 28

R

removing
 desk accessories 33-36
 fonts 33-36

S

Save As command 14, 19-21, 22
Save command 19-21, 22
selecting documents by typing 22
Shut Down command 30
Special menu 29
starting up 8
 first time 4-7
 problems with 39
startup disk
 changing 25
 current 24-25
switching on/off 8
System file 33-36
 modified 7, 24
 problems with 39-40
System Folder 6-7

T

Tab key 22
text-only documents 15
text view 25-26
3 1/2-inch disk drive 22
 adding 11
 copying to 23
troubleshooting 39-41
typing, selecting documents by 22

U

unpacking 2
Use MiniFinder command 29-30

V, W, X, Y, Z

views 25-26



Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010
TLX 171-576
The End

030-1228-A